

KL0S Shack Note #23

Amplifier Tube Socket Repair

My venerable Drake L-4B HF amplifier has provided great service since I purchased it new way back in 1979. About a year ago I noticed that as I was tuning it up to chase a DX station it was only putting out about half its normal power. I quickly discovered that one of the two 3-500Z tubes was not "lit" (i.e. the filament was not on). After taking the amp apart I discovered that the dark tube had a filament pin whose solder had slightly reflowed downward out of the pin – I would discover that's an indicator of excess heat at that pin, probably caused by a poor connection. What I didn't know at the time was that the tube socket was actually the culprit. I really thought the tubes were just showing their age and I replaced them with a pair of new units from RF Parts (www.rfparts.com).

Fast forward – the other day the same half-power fault appeared and sure 'nuff the tube in the same position as before that would not light. Nuts! I disassembled the amp (you get to be an expert at that after 30+ years) and found the same filament pin solder reflow issue had manifested itself on the new tube and apparently on the same filament pin as before. Obviously that can't be a coincidence, there had to be more to the story.



The loose tube socket pin – compare the clip closure to the others

It would not be brain surgery to replace the tube socket (just a PITA) but that appeared to be the only real solution. Although I have a couple of spare 3-500Z sockets I had no desire to take that on so off to the Internet I went to look for other hopefully easier fixes. I found a recent thread in

the eHam forums where this exact problem was being discussed. One contributor wrote that the spring clips that compress the small split style tube holding connectors into which the tube pins are inserted can lose their "springiness" over time and that it was a simple affair to either replace the clip or attempt to squeeze it back into proper shape; that's not a great option since it had already deformed previously and would be prone to doing so again. Fortunately I have a couple of spare 3-500Z sockets and I found that it was in fact very easy to remove one of the good spring clips.



Spare tube socket parts donor

So back into the L-4B I went and it took me less than a minute to replace the spring clip and as you can see the difference between the old and new clip was substantial:



The replacement clip (top) compared to the loose clip

I then "reflowed" the solder in the offending filament pin by turning the tube upside down, carefully applying heat to the pin and adding a small amount of silver solder to the mix. After letting the pin cool I checked the continuity between the two filament pins and it was still ok. I'll make the same repair to the original tube since it's part of what's now the backup pair.



New spring clip in place

You can see from the above picture that the new clip now compresses the pin holder tighter than before. And with the tube reinserted into the socket the difference was also apparent.



Tube replaced – filament pin nice and tight

Hopefully this is the long-term solution for this issue. If you have an amplifier you may want to check the tube socket pins – DISCLAIMER – you

CAN BE KILLED by voltages inside your amplifier; always make sure the power is disconnected, the high voltage is bled off properly, and that you never defeat any voltage interlocks. If you don't know what you're doing don't take a chance; if you do know what you're doing BE CAREFUL!

Now back up and running – isn't she a beauty?



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